



State of Utah

GARY R. HERBERT
Governor

SPENCER J. COX
Lieutenant Governor

Department of
Environmental Quality

L. Scott Baird
Interim Executive Director

DIVISION OF WASTE MANAGEMENT
AND RADIATION CONTROL

Ty L. Howard
Director

August 15, 2019

Austin Weddle, DHI Operations Manager
R.N. Industries (RNI)
355 South 1000 East
P. O. Box 1168
Vernal, UT 84078

RE: RNI Bluebell Class IIIb Oil and Gas Exploration and Production Waste Landfill Permit

Dear Mr. Weddle:

The 30-day public comment period for the RNI Bluebell Class IIIb Oil and Gas Exploration and Production Waste landfill draft permit began June 26, 2019 and ended July 26, 2019. No comments were received.

Enclosed is the final Permit #1901, with an effective date of August 15, 2019 and an expiration date of August 14, 2029.

If you have any questions, please contact Doug Taylor at (801) 536-0240.

Sincerely,

Ty L. Howard, Director
Division of Waste Management and Radiation Control

TLH/DT/kl

Enclosures: Permit with attachments (DSHW-2019-002561, DSHW-2019-002725, DSHW-2019-002726, DSHW-2019-002728)

(Over)

DSHW-2019-008922

c: Jordan Mathis, Health Officer, Tri-County Health Department
Darrin Brown, Environmental Health Director, Tri-County Health Department
Nathan Hall, P.E., District Engineer
Chance Massey, DHI District Manager
Jon Peaden, ES, GEOSTRATA

DIVISION OF WASTE MANAGEMENT
AND RADIATION CONTROL
SOLID WASTE LANDFILL PERMIT

**R.N. Industries Bluebell Class IIIb Oil and Gas
Exploration and Production Waste Landfill**

Pursuant to *Utah Solid and Hazardous Waste Act*, Title 19, Chapter 6, Part 1, Utah Code Annotated (Utah Code Ann.) (the Act) and the *Utah Solid Waste Permitting and Management Rules*, Utah Administrative Code R315-301 through 320 adopted thereunder, a Permit is issued to

R. N. Industries
as owner and operator (Permittee),

to own, construct, and operate a Landfill located in Duchesne County, Utah as shown in the Permit Application that was determined complete on May 15, 2019.

The Permittee is subject to the requirements of R315-301 through 320 of the Utah Administrative Code and the requirements set forth herein.

All references to R315-301 through 320 of the Utah Administrative Code are to regulations that are in effect on the date that this permit becomes effective.

This Permit shall become effective August 15, 2019.

This Permit shall expire at midnight August 14, 2019.

Closure Cost Revision Date: August 15, 2024.

Signed this 15 day of August, 2019



Ty L. Howard, Director
Utah Division of Waste Management and Radiation Control

FACILITY OWNER/OPERATOR INFORMATION

LANDFILL NAME: R.N. Industries Bluebell Class IIIb Oil and Gas
Exploration and Production Waste Landfill

OWNER NAME: R.N. Industries

OWNER ADDRESS: 355 South 1000 East
P. O. Box 1168
Vernal, Utah 84078

OWNER PHONE NO.: 435-722-2800

OPERATOR NAME: R.N. Industries

OPERATOR ADDRESS: 355 South 1000 East
P. O. Box 1168
Vernal, Utah 84078

OPERATOR PHONE NO.: 435-722-2800

TYPE OF PERMIT: Class IIIb Landfill

PERMIT NUMBER: 1901

LOCATION: Landfill site is located in SW 1/4 section of Section 4
Township 2 South, Range 2 West, Salt Lake Base and
Meridian, Duchesne County, Utah,
Lat. 40⁰19'36.78"; Long. 110⁰ 7' 8.78".
6878 Bluebell Road, Roosevelt, Utah 84066

PERMIT HISTORY: Permit signed: August 15, 2019

The term, "Permit," as used in this document is defined in R315-301-2(55) of the Utah Administrative Code. Director as used throughout this permit refers to the Director of the Division of Waste Management and Radiation Control

The Permit application for the Landfill was deemed complete on the date shown on the signature page of this Permit.

This Permit consists of the signature page, Facility Owner/Operator Information section, sections I through V, and all attachments to this Permit.

The facility as described in this Permit consists of a Class IIIb Oil and Gas Exploration and Production Waste Landfill

Compliance with this Permit does not constitute a defense to actions brought under any other local, state, or federal laws. This Permit does not exempt the Permittee from obtaining any other local, state or federal permits or approvals required for the facility operation.

The issuance of this Permit does not convey any property rights, other than the rights inherent in this Permit, in either real or personal property, or any exclusive privileges other than those inherent in this Permit. Nor does this Permit authorize any injury to private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations, including zoning ordinances.

The provisions of this Permit are severable. If any provision of this Permit is held invalid for any reason, the remaining provisions shall remain in full force and effect. If the application of any provision of this Permit to any circumstance is held invalid, its application to other circumstances shall not be affected.

By this Permit, the Permittee is subject to the following conditions.

PERMIT REQUIREMENTS

I. GENERAL COMPLIANCE RESPONSIBILITIES

I.A. General Operation

- I.A.1. The Permittee shall operate the landfill in accordance with all applicable requirements of R315-304 of the Utah Administrative Code, that are in effect as of the date of this Permit unless otherwise noted in this Permit. Any permit noncompliance or noncompliance with any applicable portions of Utah Code Ann. § 19-6-101 through 126 and applicable portions of R315-301 through 320 of the Utah Administrative Code constitutes a violation of the Permit or applicable statute or rule and is grounds for appropriate enforcement action, permit revocation or modification.

I.B. Acceptable Waste

- I.B.1. This Permit is for disposal of non-liquid oil and gas exploration and production waste.

I.C. Prohibited Waste

- I.C.1. Hazardous waste as defined by R315-1 and R315-2 of the Utah Administrative Code;
- I.C.2. PCB's as defined by R315-301-2(53) of the Utah Administrative Code, except PCB's specified by R315-315-7(2)(a) and (c) of the Utah Administrative Code;
- I.C.3. Household waste;
- I.C.4. Municipal waste;
- I.C.5. Commercial waste; and
- I.C.6. Regulated asbestos-containing material.
- I.C.7. Any prohibited waste received and accepted for disposal at the facility shall constitute a violation of this Permit, of Utah Code Ann. § 19-6-101 through 126 and of R315-301 through 320 of the Utah Administrative Code.

I.D. Inspections and Inspection Access

- I.D.1. The Permittee shall allow the Director or an authorized representative, or representatives from the Tri-County Health Department, to enter at reasonable times and:
- I.D.1.a Inspect the landfill or other premises, practices or operations regulated or required under the terms and conditions of this Permit or R315-301 through 320 of the Utah Administrative Code;
- I.D.1.a.(i) Have access to and copy any records required to be kept under the terms and conditions of this Permit or R315-301 through 320 of the Utah Administrative Code;

I.D.1.a.(ii) Inspect any loads of waste, treatment facilities or processes, pollution management facilities or processes, or control facilities or processes required under this Permit or regulated under R315-301 through 320 of the Utah Administrative Code; and

I.D.1.a.(iii) Create a record of any inspection by photographic, video, electronic, or any other reasonable means.

I.E. Noncompliance

I.E.1. If monitoring, inspection, or testing indicates that any permit condition or any applicable rule under R315-301 through 320 of the Utah Administrative Code may be or is being violated, the Permittee shall promptly make corrections to the operation or other activities to bring the facility into compliance with all permit conditions or rules.

I.E.2. In the event of noncompliance with any permit condition or violation of an applicable rule, the Permittee shall promptly take any action reasonably necessary to correct the noncompliance or violation and mitigate any risk to the human health or the environment. Actions may include eliminating the activity causing the noncompliance or violation and containment of any waste or contamination using barriers or access restrictions, placing of warning signs, or permanently closing areas of the facility.

I.E.3. The Permittee shall:

I.E.3.a Document the noncompliance or violation in the daily operating record, on the day the event occurred or the day it was discovered;

I.E.3.b Notify the Director of the Utah Division of Waste Management and Radiation Control by telephone within 24 hours, or the next business day following documentation of the event; and

I.E.3.c Give written notice of the noncompliance or violation and measures taken to protect human health and the environment within seven days after Director Notification.

I.E.4. Within thirty days after the documentation of the event, the Permittee shall submit to the Director a written report describing the nature and extent of the noncompliance or violation and the remedial measures taken or to be taken to protect human health and the environment and to eliminate the noncompliance or violation. Upon receipt and review of the assessment report, the Director may order the Permittee to perform appropriate remedial measures including development of a site remediation plan for approval by the Director.

I.E.5. In an enforcement action, the Permittee may not claim as a defense that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with R315-301 through 320 of the Utah Administrative Code and this Permit.

I.F. Revocation

I.F.1. This Permit is subject to revocation if the Permittee fails to comply with any condition of the Permit. The Director will notify the Permittee in writing prior to any proposed revocation action and such action shall be subject to all applicable hearing procedures established under R305-7 of the Utah Administrative Code and the Utah Administrative Procedures Act.

I.G. Attachment Incorporation

I.G.1. Attachments to this Permit are enforceable conditions of this Permit, as are documents incorporated by reference into the attachments. Language in this Permit supersedes any conflicting language in the attachments or documents incorporated into the attachments.

II. DESIGN AND CONSTRUCTION

II.A. Design and Construction

II.A.1. The landfill shall be constructed according to the design outlined in Attachment 1 and in the area designated in Attachment 1, including landfill cells, fences, gates, and berms prior to acceptance of waste.

II.A.2. The Permittee shall notify the Director upon completion of construction of any landfill cells or run-on and run-off diversion systems. No landfill cells or run-on and run-off diversion system may be used until construction is approved by the Director and this permit modified.

II.A.3. The Permittee shall notify the Director of the completion of construction of any final cover system and shall provide all necessary documentation and shall apply for approval of the construction from the Director and modification of this permit.

II.A.4. If ground water is encountered during excavation of the landfill, the Director shall be notified immediately, and an alternative construction design developed and submitted for approval.

II.A.5. All engineering drawings submitted to the Director shall be stamped by a professional engineer with a current registration in Utah.

II.B. Run-On Control

II.B.1. The Permittee shall construct drainage channels and diversions as specified in Attachment 1 and shall maintain them at all times to effectively prevent runoff from the surrounding area from entering the landfill.

III. LANDFILL OPERATION

III.A. Operations Plan

III.A.1. The Permittee shall keep the Operations Plan included in Attachment 2 on site at the landfill or at the location designated in section III-H of this Permit. The Permittee shall operate the landfill in accordance with the operations plan. If necessary, the Permittee may modify the Operations Plan, provided that the modification meets all of the requirements of R315-301 through 320 of the Utah Administrative Code, is as protective of human health and the environment as the Operations Plan approved as part of this Permit, and is approved by the Director as a permit modification under R315-311-2(1) of the Utah Administrative Code. The Permittee shall note any modification to the Operations Plan in the daily operating record.

III.B. Security

III.B.1. The Permittee shall operate the Landfill so that unauthorized entry to the facility is restricted. The Permittee shall:

III.B.1.a Lock all facility gates and other access routes during the time the landfill is closed.

III.B.1.b Have at least a person employed by the Permittee at the landfill during all hours that the landfill is open.

III.B.1.c Construct all fencing and any other access controls as shown in Attachment 1 to prevent access by persons or livestock by other routes.

III.C. Training

III.C.1. The Permittee shall provide training for on-site personnel in landfill operation, including waste load inspection, hazardous waste identification, and personal safety and protection.

III.D. Burning of Waste

III.D.1. Intentional burning of solid waste is prohibited and is a violation of R315-303-4(2)(b) of the Utah Administrative Code.

III.D.2. The Permittee shall extinguish all accidental fires as soon as reasonably possible.

III.E. Cover

III.E.1. The Permittee shall cover the waste or apply moisture as necessary to control fugitive dust. The Permittee shall record in the daily operating record and the operator shall certify, at the end of each day of operation when waste, cover and moisture are placed; the amount and type of cover placed and the area receiving cover.

- III.E.2. The Permittee shall visually inspect incoming waste loads to verify that no wastes other than those allowed by this permit are disposed in the landfill. The Permittee shall conduct a complete waste inspection at a minimum frequency of 1 % of incoming loads, but no less than one complete inspection per day. The Permittee shall select the loads to be inspected on a random basis.
- III.E.3. The Permittee shall inspect all loads that the Permittee suspects may contain a waste not permitted for disposal at the landfill.
- III.E.4. The Permittee shall conduct complete random inspections as follows:
 - III.E.4.a The Permittee shall conduct the random waste inspection at the working face or an area designated by the Permittee.
 - III.E.4.b The Permittee shall direct that loads subjected to complete inspection be unloaded at the designated area;
 - III.E.4.c Loads shall be spread by equipment or by hand tools;
 - III.E.4.d Personnel trained in hazardous waste recognition and recognition of other unacceptable waste shall conduct a visual inspection of the waste; and
 - III.E.4.e The personnel conducting the inspection shall record the results of the inspection on a waste inspection form as found in Attachment 3. The Permittee shall place the form in the daily operating record at the end of the operating day.
 - III.E.4.f The Permittee or the waste transporter shall properly dispose of any waste found that is not acceptable at the facility at an approved disposal site for the waste type and handle the waste according to the rules covering the waste type.

III.F. Self Inspections

- III.F.1. The Permittee shall inspect the facility to prevent malfunctions and deterioration, operator errors, and discharges that may cause or lead to the release of wastes or contaminated materials to the environment or create a threat to human health or the environment. The Permittee shall complete these general inspections no less than quarterly and shall cover the following areas: Waste placement, compaction, cover; fences and access controls; roads; run-on/run-off controls; ground water monitoring wells; final and intermediate cover; litter controls; and records. The Permittee shall place a record of the inspections in the daily operating record on the day of the inspection. The Permittee shall correct the problems identified in the inspections in a timely manner and document the corrective actions in the daily operating record.

III.G. Recordkeeping

III.G.1. The Permittee shall maintain and keep on file at the facility, a daily operating record and other general records of landfill operation as required by R315-302-2(3) of the Utah Administrative Code. The landfill operator, or other designated personnel, shall date and sign the daily operating record at the end of each operating day. Each record to be kept shall contain the signature of the appropriate operator or personnel and the date signed. The Daily operating record shall consist of the following two types of documents:

III.G.1.a Records related to the daily landfill operation or periodic events including:

III.G.1.a.(i) The number of loads of waste and the weights or estimates of weights or volume of waste received each day of operation and recorded at the end of each operating day;

III.G.1.a.(ii) Major deviations from the approved plan of operation recorded at the end of the operating day the deviation occurred;

III.G.1.a.(iii) Results of monitoring required by this Permit recorded in the daily operating record on the day of the event or the day the information is received;

III.G.1.a.(iv) Records of all inspections conducted by the Permittee, results of the inspections, and corrective actions taken shall be recorded in the record on the day of the event.

III.G.1.b Records of a general nature including:

III.G.1.b.(i) A copy of this Permit, including all attachments;

III.G.1.b.(ii) Results of inspections conducted by representatives of the Director of the Division of Waste Management and Radiation Control, and of representatives of the local Health Department, when forwarded to the Permittee;

III.G.1.b.(iii) Closure and Post-closure care plans; and

III.G.1.b.(iv) Records of employee training.

III.H. Reporting

III.H.1. The Permittee shall prepare and submit to the Director an Annual Report as required by R315-302-2(4) of the Utah Administrative Code. The Annual Report shall include: the period covered by the report, the annual quantity of waste received, an annual update of the financial assurance mechanism and all training programs completed.

III.I. Roads

III.I.1. The Permittee shall improve and maintain all access roads within the landfill boundary that are used for transporting waste to the landfill for disposal shall be improved and maintained as necessary to assure safe and reliable all-weather access to the disposal area.

III.J. Ground Water Monitoring

- III.J.1. The Permittee shall monitor the ground water underlying the landfill in accordance with the Ground Water Monitoring Plan and the Ground Water Monitoring Quality Assurance/Quality Control Plan contained in Attachment 1. If necessary, the Permittee may modify the Ground Water Monitoring Plan and the Ground Water Monitoring Quality Assurance/Quality Control Plan, provided that the modification meets all of the requirements of R315-301 through 320 of the Utah Administrative Code and is as protective of human health and the environment as that approved in Attachment 1, and is approved by the Director as a minor modification under R315-311-2(1)(a) of the Utah Administrative Code. The Permittee shall note in the daily operating record any modification to the Ground Water Monitoring Plan and the Ground Water Monitoring Quality Assurance/Quality Control Plan. A plan change that the Director finds to be less protective of human health or the environment than the approved plan is a major modification and is subject to the requirements of R315-311 of the Utah Administrative Code.

IV. CLOSURE REQUIREMENTS

IV.A. Closure

- IV.A.1. Final cover of the landfill shall be as shown in Attachment 4. The final cover shall meet, at a minimum, the standard design for closure as specified in R315-305-5(5)(b) of the Utah Administrative Code.
- IV.A.2. This Permittee has demonstrated through geologic, hydrogeologic, climatic, waste stream, cover material properties, infiltration factors, and other factors that the landfill will not contaminate ground water and is approved for the alternative cover design as outlined in the Permit Application. Upon finding by the Director of any contamination of ground water resulting from the landfill, the Director may revoke this alternative cover design approval and the Director may require placement of a cover meeting the requirements of R315-303-3(4)(a) of the Utah Administrative Code or other remedial action as required by the Director.

IV.B. Title Recording

- IV.B.1. The Permittee shall meet the requirements of R315-302-2(6) of the Utah Administrative Code by recording a notice with the Duchesne County Recorder as part of the record of title that the property has been used as a landfill. The notice shall include waste disposal locations and types of waste disposed. The Permittee shall provide the Director the notice as recorded.

IV.C. Post-Closure Care

- IV.C.1. The Permittee shall perform post-closure care at the closed landfill in accordance with the Post-Closure Care Plan contained in the Permit Application. Post-closure care shall continue until all waste disposal sites at the landfill have stabilized and the finding of R315-302-3(7)(c) of the Utah Administrative Code is made.

IV.D. Financial Assurance

IV.D.1. The Permittee shall establish and fund the approved financial assurance mechanism, as required in R315-309, prior to receipt of waste. The Permittee shall adequately fund and maintain the financial assurance mechanism(s) to provide for the cost of closure at any stage or phase or anytime during the life of the landfill or the permit life, whichever is shorter. The Permittee shall keep the approved financial assurance mechanism in effect and active until closure and post-closure care activities are completed and the Director has released the facility from all post-closure care requirements.

IV.D.2. The Permittee shall notify the Director of the establishment of the approved financial assurance mechanism and shall receive acknowledgment from the Director that the established mechanism complies with the approved method prior to the acceptance of waste.

IV.E. Financial Assurance Annual Update

IV.E.1. The Permittee shall submit an annual revision of closure and post-closure costs for inflation and financial assurance funding as required by R315-309-2(2) of the Utah Administrative Code, to the Director as part of the annual report. The Permittee shall submit the information as required in R315-309-9 of the Utah Administrative Code and shall meet the qualifications for the "Corporate Financial Test" or "Corporate Guarantee" each year.

IV.F. Closure Cost and Post-Closure Cost Revision

IV.F.1. The Permittee shall submit a complete revision of the closure and post-closure cost estimates by the Closure Cost Revision Date listed on the signature page of this Permit and any time the facility is expanded, any time a new cell is constructed, or any time a cell is expanded.

V. ADMINISTRATIVE REQUIREMENTS

V.A. Permit Modification

V.A.1. Modifications to this Permit may be made upon application by the Permittee or by the Director following the procedures specified in R315-311-2 of the Utah Administrative Code. The Permittee shall be given written notice of any permit modification initiated by the Director.

V.A.2. Permit Transfer

V.A.2.a This Permit may be transferred to a new Permittee or new Permittees by complying with the permit transfer provisions specified in R315-310-11 of the Utah Administrative Code.

V.B. Expansion

- V.B.1. This Permit is for the operation of a Class IIIb Landfill according to the design and Operation Plan described and explained in the Attachment 1. Any expansion of the current footprint designated in the description contained in Attachment 1, but within the property boundaries designated in the Attachment 1, shall require submittal of plans and specifications to the Director. The plans and specifications shall be approved by the Director prior to construction.
- V.B.2. Any expansion of the landfill facility beyond the property boundaries designated in the description contained in the Attachment 1 shall require submittal of a new Permit Application in accordance with the requirements of R315-310 of the Utah Administrative Code.
- V.B.3. Any addition to the list of acceptable waste in Section I-B shall require submittal of all necessary information to the Director and the approval of the Director.
- V.C. Expiration
- V.C.1. If the Permittee desires to continue operating this landfill after the expiration date of this Permit, the Permittee shall submit an application for permit renewal at least six months prior to the expiration date, as shown on the signature (cover) page of this Permit. If the Permittee timely submits a permit renewal application and the permit renewal is not complete by the expiration date, this Permit shall continue in force until renewal is completed or denied.
- V.D. Status Notification
- V.D.1. Eighteen months from the date of this Permit, the Permittee shall notify the Director in writing of the status of the construction of this facility unless construction is complete and operation has commenced. If construction has not begun within 18 months, the Permittee shall submit adequate justification to the Director as to the reasons that construction has not commenced. If no submission is made or the submission is judged inadequate by the Director, this Permit shall be revoked.
- V.E. Construction Approval and Request to Operate
- V.E.1. The Permittee shall meet each of the following conditions prior to receipt of waste:
- V.E.1.a The Permittee shall notify the Director that all the requirements of this Permit have been met and all required facilities, structures and accounts are in place.
- V.E.1.b The Permittee shall submit to the Director, for approval, documentation that all local zoning requirements and local government approvals have been obtained for operation of this landfill prior to construction of any portion of the landfill; including offices, fences, and gates.
- V.E.1.c The Permittee shall demonstrate that the lowest level of the landfill liner is greater than 5 feet from the historic high ground water elevation. The Permittee shall submit documentation of this demonstration for approval by the Director.

V.E.1.d The Permittee shall obtain from the Director written approval, prior to receipt of waste, that all information required by this section has been submitted and the information meets the requirements of this Permit and R315-301 through 320 of the Utah Administrative Code.

Attachment 1

Landfill Construction and Design and Ground Water Monitoring

2.0 ENGINEERING REPORT

2.1 CELL DESIGN

The RNI E&P landfill will consist of two separate cells that will be designed and constructed using the existing layout of Ponds 6 and 7 of the waste water disposal facility. The permit drawings show the proposed location in relation to the remaining site and surrounding land features. The ponds have historically been used as produced water evaporation ponds. The existing Pond 6 is approximately 542 feet long and 390 feet wide across the top. Pond 7 is approximately 600 feet long and 440 feet wide across the top. The ponds are both also approximately 15 feet deep with 3:1 (horizontal: vertical) interior slopes and exterior slopes.

Based on our engineering assessment, many of the pond features can be used to meet the E&P landfill requirements as presented in R315-303. Details of the existing features will be presented in subsequent sections of this report.

2.2 GEOHYDROLOGICAL ASSESSMENT

2.2.1 Regional Geology

As noted previously, the Bluebell facility is located approximately 7 Miles west of Roosevelt, Utah on the south flanks of the Uinta Mountains. The Uinta Mountains began uplifting in the Cretaceous, about 66 million years ago (Ma) and continued till the Eocene about 37 Ma (Hintze, 1988). Topographic basins formed on the north and south of the Uinta Mountains eventually accumulating up to 15,000 ft of sediment (Bradley, 1925; Fouch, 1985).

During the early Tertiary, these basins filled with sediments from alluvial, fluvial, and lacustrine deposits. The strata deposited in these alluvial (floodplain and delta) and inter fingered lacustrine (lake) deposits, are referred to as the Colton and Wasatch Formations. During this same time large freshwater lakes (Lake Flagstaff and Lake Uinta) occupied the Uintah basin. The depositional environment in and around these lakes consisted of open to marginal lacustrine and the rocks deposited in these environments are referred to as the Green River Formation. The Uinta and Duchesne formations are largely alluvial deposits that overlie the Green River formation and were in place by the end of the Oligocene (Hintze, 1988). The landscape during the Holocene has continued to be incised by streams as well as some glacial outwash deposits from the Uinta Mountains (Bryant, 1992).

2.2.2 Local Geology

The RNI facility is in the northwestern portion of the Uinta basin. The facility is underlain by the Brennan Basin Member of the Duchesne River Formation (Tdb) (Plate A-3). The proposed landfill cells are located south of the mapped geologic boundary between the Brennan Basin Member (Tdb) and the Dry Gulch Member of the Duchesne River Formation (Tdd). The Tdb is an Oligocene to upper Eocene unit that consists of varicolored siltstone and sandstone and the Tdd is an Oligocene age moderate red and grayish colored sandstone and siltstone and gray claystone (Bryant, 1992). The Tdb formation was identified during our field investigation and was found to underlie the existing Ponds 6 and 7 that is purposed for the landfill permit.

2.2.3 Facility Soils

The online National Resource Conservation Service (NRCS) was used to identify the soil units that are present at the Target Property (NRCS 2018). The soil map, located in Appendix G of this permit application, indicated that at least two (2) units are present at the Target Property. The uncertainty of mapped units at the proposed facility exists because the NRCS has not formally completed their survey in this part of Duchesne County. The units are as follows:

- NOTCOM – No Digital Data Available – 28.3% and
- ScC – Solirec-Progresso complex, 2 to 8 percent slopes – 71.7%

2.2.4 Evaluation of Bedrock

The proposed landfill cell is underlain primarily by the Brennan Basin Member (Tdb) of the Duchesne Formation. The Tdb formation consists of 1-2-meter-thick discontinuous fluvial sandstone lenses inter-fingered with dark green and purplish red siltstone and shale (Bryant, 1992). During the installation of the groundwater monitoring wells it was noted that bedrock that appeared to be like the Brennan Basin Member was encountered approximately 4 to 5 feet below the ground surface. Plate A-7 and A-8 in Appendix A of this report contains cross sections of each landfill cell and shows the approximate depth to bedrock at the RNI facility.

GeoStrata advanced six borings and excavated associated test pits at the boring locations in the vicinity of the proposed Landfill impoundment (Plate A-6) in an effort to characterize the geology of the site. Bedrock consisted of thinly bedded varicolored sandstones, siltstones, and shale.

GeoStrata preformed backpressure permeability tests on a sample from drilling location LF-A. The sample was a slightly fractured tight sandstone. The permeability was 6.27×10^{-5} cm/sec.

2.2.5 Ground Water

Six monitor wells have been installed near the proposed landfill cells. Plate A-5 shows the locations of the monitor wells. There are two up-gradient monitor wells (LF-E and MW-17) and four down gradient monitoring wells (LF-A, LF-B, LF-C, and LF-D). Water levels have been measured multiple times and were measured most recently on February 13, 2018. Ground water elevation data are included in table 2.2.5.a.

Table 2.2.5.a

Well No.	2/13/2018	
	Surface Elevation (ft)	Water Elevation (ft)
LF-A	5630	5622.6
LF-B	5635	5628.5
LF-C	5636	5629.1
LF-D	5636	5625.4
LF-E	5660	5649.3
MW-17	5662	5648.5

Plate A-6 show the location these borings and monitoring wells. Water elevation data collected on February 7, 2018 was used to determine the direction of ground water flow at the subject site. Ground water flows to the east-northeast towards Cottonwood Creek. A geologic cross section of the proposed landfill also identifies the elevation of the potentiometric surface of the groundwater (Plate A-7 and A-8).

Based on our finding of groundwater at the RNI facility, groundwater is measured as being greater than 5-feet below the lowest portion of the proposed landfill. Plate A-4 of this report contains geologic cross sections of the proposed landfill and identifies the types of bedrock, soils and inferred elevations of ground water under the RNI facility. The data used to create these cross sections was obtained from the geologic map (plate A-3), subsurface exploration data (section 2.3.1) and ground water data provided in the table above.

2.2.6 Surface Water

There is one spring within 1 mile of the RNI facility. The freshwater emergent spring is located upgradient of the landfill cells on the extreme western edge of the RNI facility. Other than the spring the closest surface water feature is Cottonwood Creek; which is approximately 4.5 miles to the east. There are numerous ephemeral drainages that are identified near the facility. A map locating these drainages is provided in Appendix A as plate A-4. Landfill related activities are not expected to impact these drainages. According to the NOAA climate data online the average total annual rainfall for the general area of the landfills is approximately 9.4 inches.

2.2.7 Groundwater and Surface Water Monitoring Plan

Groundwater was encountered at the subject site in the six monitor wells. The groundwater resides in the varicolored siltstone and sandstone of the Brennan Basin Member (Tdb). RNI proposes to sample groundwater from the six monitor wells on a semiannual basis. Water will be analyzed for the following analytes as required in R315-308-4:

- Heavy Metals including Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Cobalt, Copper, Lead, Mercury, Nickel, Selenium, Silver, Thallium, Vanadium, Zinc
- Inorganic Constituents including Ammonia, Carbonate/Bicarbonate, Calcium, Chemical Oxygen Demand (COD), Chloride, Iron, Magnesium, Manganese, Nitrate, pH, Potassium, Sodium, Sulfate, Total Dissolved Solids (TDS), Total Organic Carbon (TOC)
- Acetone, Acrylonitrile, Bromochloromethane, Bromodichloromethane, Bromoform, Carbon disulfide, Carbon tetrachloride, Chlorobenzene, Chloroethane, Chloroform, Dibromochloromethane, 1,2-Dibromo-3-chloropropane, 1,2-Dibromoethane, 1,2-Dichlorobenzene (ortho), 1,4-Dichlorobenzene (para), trans-1,4-Dichloro-2-butene, 1,1-Dichloroethane, 1,2-Dichloroethane, 1,1-Dichloroethylene, cis-1,2-Dichloroethylene, trans-1,2-Dichloroethylene, 1,2-Dichloropropane, cis-1,3-Dichloropropene, trans-1,3-Dichloropropene, 2-Hexanone, Methyl bromide, Methyl chloride, Methylene bromide, Methylene chloride, Methyl ethyl ketone, Methyl iodide, 4-Methyl-2-pentanone, Styrene, 1,1,1,2-Tetrachloroethane, 1,1,2,2-Tetrachloroethane, Tetrachloroethylene, 1,1,1-Trichloroethane, 1,1,2-Trichloroethane, Trichloroethylene, Trichlorofluoromethane, 1,2,3-Trichloropropane, Vinyl acetate, Vinyl Chloride
- Gasoline Range Organics (Method SW-846 8260C)

As required in R315-308-2(8) RNI will use a statistical method for determining whether a significant change has occurred as compared to background. To establish a background range of groundwater constituents, RNI will use the procedure as required in R315-308-2(5)(a) where eight independent samples will be collected from the upgradient wells and four independent samples will be collected from down gradient wells. This sampling to establish background will occur in the first year of the landfill operation. Based on the sampling results after the first year, the 95% upper confidence interval will be calculated for each constituent. Resulting data will be normally distributed and will assume homoscedasticity.

During operations of the landfill semiannual samples will be collected and results of each constituent will be compared using a parametric analysis of variance. If concentrations of a constituent are greater than the 95% confidence interval, it will be considered an outlier and will be further evaluated to determine if it is a normal fluctuation in the groundwater or if it is a result of possible leachate or other contaminated water from the water disposal facility. A report of the data and outliers will be provided to the division and an appropriate response will be determined.

2.3 SLOPE STABILITY

2.3.1 Subsurface Investigation

As part of this investigation, sample of existing embankment near the southeastern boundary of the Bluebell Pond 5 was obtained through the inspection of a cut made in the embankment to breach the pond. In addition, a representative sample of the soils exposed in the landfill at the Wonsit facility was likewise sampled using hand equipment. No deep explorations in the form of test pits or boreholes were advanced as part of our investigation at either facility.

2.3.2 Laboratory Testing

Geotechnical laboratory tests were conducted on samples obtained during our field investigation. The laboratory testing program was designed to evaluate the engineering characteristics of onsite earth materials. Laboratory tests conducted during this investigation include:

- Natural Moisture Content
- Grain Size Distribution Analysis (ASTM D422)
- Atterberg Limits (ASTM D4318)
- Consolidated Undrained Triaxial Compression Test (ASTM D4767)

- Direct Shear Test (ASTM D3080)

Triaxial testing was completed on a remolded sample obtained from the Wonsit facility which classifies as a Sandy Lean CLAY (CL). Results of our testing indicate that the material has a compressive strength consisting of an effective friction angle of 29 degrees and an effective cohesion of 160 psf. A direct shear test was completed on the sample obtained from the embankment of Pond 5 at the Bluebell facility which classifies as a Silty SAND (SM) with gravel. Results of our testing indicate that the embankment soils have an effective shear strength consisting of an angle of internal friction of 30 degrees and a cohesion of 165 psf. The following table is given as a summary of the information described above;

Sample Location	Effective Friction Angle (deg)	Effective Cohesion (psf)	Soil Type
Wonsit Facility	29	160	CL
Bluebell Facility	30	165	SM

The results of all laboratory tests are presented on the Laboratory Summary Table and the test result plates presented in Appendix C (Plates C-1 to C-6).

2.3.3 Subsurface Conditions

Based on our observations made of the excavated cut in the southeastern embankment of Pond 5, the embankment soils consist of a relatively homogenous Silty SAND (SM) with gravel. Results of our laboratory testing indicate that the fine-grained matrix is non-plastic, whereas the granular portion of the soil contained gravels up to 2½ inches in diameter. The moisture content of the sample obtained from the embankment was measured at 2.5 percent.

Based on our examination of the surficial material exposed at the Wonsit facility at the time of our investigation, the soils consist of relatively homogenous Sandy Lean CLAY (CL). Results of our laboratory testing indicate that the fine-grained soils have low plasticity.

No evidence of groundwater was observed during our field investigation at the Bluebell facility. However, numerous monitoring wells have been completed previously in areas to the east of Pond 6. Based on readings completed as part of a monitoring program at Bluebell, the groundwater exists at a depth of 7 feet below the site grade as it existed at the time of our investigation. As such, the groundwater has been incorporated into our slope stability modeling at this depth.

2.3.4 Pond Embankment Stability

GeoStrata has evaluated the stability of the proposed landfill cell embankments as well as the proposed landfill waste material. Based on our understanding of the project, the landfill material will be sloped at an approximate 3H:1V grade with an approximate 50-foot-wide flat area at the top of the fill pad. The stability of the embankments and slopes was completed using SLIDE, a computer application incorporating (among others) Bishop's Simplified Method of analysis. Calculations for stability were developed by searching for the minimum factor of safety for a circular-type failure. Stability analyses were conducted at two representative cross-sections; one through the embankment of Pond 6 and another through the embankment of pond 7 as shown on Plate A-2. Both the interior and exterior of both these cross sections were analyzed under static and pseudo-static conditions. The pseudo static condition is used to assess stability of slopes during seismic events. The peak ground acceleration for the Maximum Credible Earthquake (MCE) was estimated using the site's approximate latitude and longitude and the United States Geological Survey 2009 ground motion calculator version 5.1.0 which correlates the MCE to a 2 percent probability of exceedance in 50 years. Using this procedure, the peak ground acceleration is estimated to be 0.16g. In accordance with Hynes-Griffin (1984), half of this value was used in our analyses. This methodology assumes that no greater than 3 meters of deformation will occur if the calculated factor of safety is greater than 1.0.

The strength value for the embankment soils was based on the results of our direct shear testing described above, and consisted of a friction angle of 30 degrees and a cohesion value of 165 psf. The strength value for the landfill waste material was based on the results of our triaxial testing, and consisted of a friction angle of 29 degrees and a cohesion of 160 psf. We understand that the landfill will incorporate a geosynthetic liner. We therefore assumed no seepage from the landfill cell.

The results of our stability modeling indicate the following factors of safety for embankment slope failure:

Stability Assessment	Factor of Safety
Profile A – Pond 6 Downslope Static	2.15
Profile A – Pond 6 Downslope Seismic	1.71
Profile A – Pond 6 Upslope Static	2.20
Profile A – Pond 6 Upslope Seismic	1.73
Profile B – Pond 7 Downslope Static	2.17
Profile B – Pond 7 Downslope Seismic	1.70
Profile B – Pond 7 Upslope Static	2.30
Profile B – Pond 7 Upslope Seismic	1.79

Results of the slope stability modeling are presented in Appendix I as Plates I-1 to I-8 attached to this Permit application. Slopes with factors of safety greater than 1.5 and 1.1 for the static and pseudo static conditions respectively are typically considered stable. As indicated above the embankments have factors of safety for the static and pseudo static conditions greater than 1.5 and 1.1, respectively. It is therefore our opinion that the existing embankments are suitable for use for the planned landfill.

2.4 EMBANKMENT AND LINER CONSTRUCTION

As previously discussed the existing embankments and liner were constructed in the 1990s. The quality of the construction of the embankments was documented and recorded by Uintah Engineering Inc. We have included their documentation of the construction of the embankment and liner in Appendix I of this permit application. Also included in Appendix I is previous correspondence with the Division regarding this construction data.

2.5 STORM WATER MANAGMENT

The original construction of the evaporation ponds is located away from existing drainages so that storm water would have minimal impact on the pond embankments. With the modified use of the pond embankments for landfill, run-on storm water is diverted around the embankments to minimize liquids admitted to the active landfill area and would meet the requirement of R315-303-3(c). The storm water is also diverted around the proposed staging area for landfill waste.

To minimize run-off waters from the active areas of the landfill as required by R315-303-3(d), the landfill has been designed to control run-off waters from the active area of the landfill resulting from a maximum flow of a 25-year storm. Once the landfill capacity has exceeded the height of the existing embankments, run-off water from the landfill will be diverted into the proposed secondary containment ponds. The secondary containment ponds are intended to act as a retention basin for the storm water run-off. These retention basins will have a capacity of approximately 65,000 cubic feet (1.25-acre feet) for the northerly basin and 65,000 cubic feet (1.25 acer feet) for the southerly basin. The estimated run-off volume of water in a 25-year storm event is approximately 53,000 cubic feet (1.21 Acer feet) for the northerly run-ff. The southerly run-off with have approximately 54,000 cubic feet (1.22-acre feet) of run-off. The proposed retention basins are designed to contain potential run-off within the existing retention basin of a 25-year storm event. Drawings of the retention basins are included in appendix B. Run-off storm water from a 25-year storm event will remain in the secondary containment and will not be released off-site.

Run-off of storm waters was estimated using a site water balance calculation. This calculation was based on the soils and run-off curve number. Site soils are classified as solirec soil that are in poor to fair hydraulic condition. Based on the National Resources Conservation Service (NRCS) the precipitation total for a 24-hour 25-year storm event is 1.53 inches. Using the curve number of 87 the estimated run-off is 0.65 inches.

Attachment 2

Operations Plan

3.0 OPERATIONS PLAN

3.1 SCHEDULE OF CONSTRUCTION

The RNI Bluebell facility was originally permitted and constructed as a RCRA Exempt E&P Waste disposal by UOOGM in 1990. The original permit was for the construction of seven evaporation ponds. Two of these original seven ponds are now proposed for conversion to an E&P Waste landfill and are identified as Ponds 6 and 7. They are the most easterly ponds of the original seven evaporation ponds. An of these were constructed between 1990 and 1997. Pond 6 was constructed in 1993 and Pond 7 was constructed in 1997. In 1998 UOOGM permitted a pond that was added to the northern portion of the facility property. In 2007 UOOGM permitted another pond that was also constructed in the northerly portion of the facility property.

According to construction inspection documents Ponds 6 and 7 at the Bluebell facility are constructed with a 60-mil HOPE liner, underlain by a 12-inch compacted clay liner. Material testing and certification letters for the pond construction are included in Appendix F of this report. Each pond liner was originary constructed to include a leak detection system used to monitor the leakage rate of the primary HOPE liner. A monitoring port for each of the pond's leak detection systems is provided for visual observation of water that may leak through the primary HOPE pond liners.

These Ponds have been operating as waste water evaporation ponds since original construction. The ponds are currently drained of an waste water and the double liner configuration will remain intact for the operational use of the landfin. To the west of both ponds there is a waste water sprinkler pad that was used to enhance evaporation. This pad was constructed using 60 mil HOPE liner and in welded to the evaporation basin liner. For each landfin cell this pad will be removed and replaced with waste preparation and staging area. This staging area will be used for parking heavy equipment and equipment storage, waste inspection and truck unloading. The staging area will also have a waste de-watering structure. Ramps will also be constructed to allow heavy equipment into the cen and to anow trucks to unload directly within the landfill. A set of plans for each landfill cell is provided in appendix B.

At the start of landfill operation RNI anticipates that approximately 4 to 10 truckloads of E&P landfill waste will be transported to the facility per day. Each truck load will have a volume of approximately 15 cubic yards. RNI anticipates that some waste brought to the landfin will consist of drilling mud and drilling fluid and some pre-processing win be required to condition this waste for the landfill. Currently RNI is considering using several

different pre-processing techniques to meet the state's landfill acceptance criteria, especially the paint filter test. Some of the techniques that RNI may utilize include, but are not limited to, a pugmill mixer or mixing basin where the waste may be combined with sawdust, fly ash, clean native soils or other components to stabilize the more liquid waste. Waste acceptance procedures and quality control of waste being disposed in the landfill are outlined in sections 3.2.1 and 3.2.2 of this report.

As the landfill waste acceptance and mixing process is implemented and changed throughout the life of the landfill adjustments to the design life of the landfill will be made. Using the currently proposed throughput assumptions, the life duration of the landfill is defined assuming that half of the waste arriving at the landfill will be suitable for direct placement into the land fill and the remaining waste will need to be pre-processed (dewatering or mixing) prior to placement in the landfill. Waste that is not suitable to be directly placed into the landfill will be mixed with other materials to reach appropriate moisture content for the paint filter test. It is assumed that mixing of native soils with waste at a ratio of approximately 0.5: 1 will reach a waste moisture content that will pass the paint filter test. For example, every 1 ton of waste there will be approximately 0.5 tons of native soils. Calculations used to estimate the mixing ratio are provided in appendix E as plate E-1 .

Based on waste mixing assumptions described above, assuming waste throughput of 4 truckloads per day and a 10% growth rate over the life of the landfill, the projected life of the landfill is approximately 8 years per landfill cell. However, the projected life may increase or decrease based on the type of pre-processing and or mixing methods utilized. A copy of the spreadsheet used to calculate this estimated life is included in Appendix E. All the assumptions presented in the previous paragraphs were used in the spreadsheet calculations.

3.2 DESCRIPTION OF WASTE HANDLING PROCEDURES

The following section describes the general procedures that will be followed under this permit application for accepting, placing and recording waste at the Bluebell Landfill.

3.2.1 General Procedures

All waste will be hauled to the Bluebell Landfill using commercial or independently owned trucks. All trucks will enter at the main gate and check in with the landfill office. Every truck load of waste will be inspected for excessive and/or inappropriate liquids prior to

disposal. A paint filter test will be performed on each load of waste. Waste that is free of liquids and passes the paint filter test will be placed directly in the landfill. Waste having excessive liquid content and failing to pass the paint filter test will be placed in a temporary storage basin for further processing. The temporary storage basin will be constructed to ensure that the waste will be isolated from the underlying soils and liquids will collect at one end of the basin. The liner material for the storage basin will be composed of either concrete, clay, or 60-mil HOPE. Liquids collected in the temporary storage basin will be removed as needed and disposed at a facility permitted for RCRA Exempt E&P liquids. Liquids may also be mixed with sufficient soils or other materials to condition them to pass a paint filter test.

Additional paint filter tests will be conducted on every 15 cubic yards of waste that requires pre-processing prior to being disposed into the landfill. Waste that fails the second paint filter test will remain in the temporary storage area and will be reprocessed as needed. Paint filter test procedures are attached to this application in appendix D.

After passing the paint filter test waste will be removed from the temporary storage area and placed in the landfill using heavy equipment or a conveyor system. All Waste will then be placed in a uniform layer in the landfill as described in section 3.2.3 Waste Disposal.

3.2.2 Waste Shipment Records

The landfill manager will retain waste shipment records as part of the daily record keeping of disposal activities. Each truck load of E&P Landfill waste delivered to the RNI facility will be required have a completed waste shipment ticket as a condition for acceptance. The waste shipment ticket will be completed by the waste generator and verified by the landfill operating staff. An example of the waste shipment ticket is included in Appendix D. The waste shipment ticket will include the following data for record keeping:

- Date and time of arrival
- Load ID number
- Quantity in cubic yards and estimated tons based on unit weight
- Type of waste
- Origin and generator of waste
- Name of trucking company and truck number
- Truck drivers name and signature

3.2.3 Waste Disposal

E&P waste may be transported into the landfill cell either directly from the delivery truck, by heavy equipment or by conveyor system. Waste will be deposited at the bottom of the landfill cell and will be placed in 12-inch thick lifts. Lifts will be distributed by use of a dozer and then compacted with the dozer and other truck traffic. Waste will be compacted to reach a firm and unyielding surface to maximize landfill capacity. Soil Materials used for daily and final cover will be derived from stockpiled soil that is already on site.

Waste deposited in the landfill will not come in contact with the HOPE liner. A protective 24-36-inch layer of fill material will be in place between the waste and HOPE liner. The 12-inch fill layer will be comprised of a free draining soil. The protective layer will be placed against all surfaces of the HOPE liner that will be covered with the landfill waste. All equipment moving in or on the landfill will not contact with the HOPE liner and will remain on the fill layer. Waste will also be placed in such a way as to avoid puncturing liner during the compaction process.

RNI does not have any plans at this time to introduce any recycling programs at the facility. In addition, due to the nature of the type of waste accepted at the facility it is unfeasible to recycle the waste that is generally accepted.

3.2.4 Plans for Excluding Waste

RNI will maintain a comprehensive waste screening process when working with waste generators. Non-E&P waste and waste that is not RCRA exempt will not be accepted at the Bluebell landfill. In an effort to make sure that waste meets this requirement, new waste generators or waste from an unknown source will be required to complete an initial waste profile assessment as a pre-condition of acceptance. This assessment will include completion of a waste characterization form and provide waste generator's lab testing data. This waste characterization process will a criterion for acceptance of material to be accepted and landfilled under this permit application.

In addition to the Waste Description Records described in Article 3.2.2 RNI will require each generator to submit a representative sample of each type of waste that the generator proposes to landfill at the Bluebell facility. RNI will perform paint filter tests on these representative samples when applicable. New waste generators will also be required to submit a letter of certification for each type of waste the generator proposes to landfill at the Bluebell facility (Proposed Waste). Each certification letter will state the generator has

been accurately characterized and tested the Proposed Waste and that generator believes the Proposed Waste meets all RNI landfill acceptance criteria.

Generators will also be required to inform RNI when waste composition changes and resubmit new or revised characterizations, lab tests, certifications and representative samples as described above.

An example of this form is provided at the end of this application in Appendix D.

RNI will not accept any waste that, in the sole judgement of RNI, has the risk of containing disease vectors.

3.3 WASTE FACILITY INSPECTION AND MONITORING

RNI personnel will inspect the facility to prevent malfunctions and deterioration, operator errors, and discharges which may cause or lead to the release of wastes to the environment that may be a threat to human health or other natural resources. Facility inspections will be conducted weekly and will be recorded using weekly and daily inspection logs as shown in Appendix D of this permit application in.

3.3.1 Fugitive Dust Control

As required in Utah Administrative Code R315-302-2(2)(g) RNI has prepared a plan for controlling fugitive dust as part of this permit application. Fugitive dust will be monitored daily and controls will be put in place as deemed necessary by the landfill operations manager.

During the construction and operational phases of the landfill, sources of dust within the landfill cell will be identified by the landfill operations manager. These sources of dust will be controlled by watering and proper placement of waste or other material in the landfill. The RNI will have staff on site certified to monitor opacity and will periodically evaluate opacity. When opacity of the dust exceeds 10% watering controls will be put in place.

The landfill operations manager will also monitor dust on all haul roads on RNI property. Haul roads leading from the main gate to the landfill cell are all unpaved. Proper maintenance of haul roads, speed limit controls and watering when dust opacity exceeds 10% will be used to mitigate fugitive dust emissions. In addition, the Bluebell facility is

regulated by the Division of Air Quality for PM emissions. The facility is currently waiting for a final approval order which will contain recommended fugitive emission control practices for the entire facility.

3.3.2 Plan for Litter Control

RNI does not anticipate accepting waste materials that will cause a wind-blown litter problem. RNI will complete a daily inspection of the landfill and surrounding area and identify any potential waste material that may escape the facility.

3.3.3 Contingency Plan for Fire or Explosion

In the event of a fire or explosion at the RNI facility, the landfill operations manager will be notified. The landfill operations manager will then contact local emergency authorities to initiate emergency response. A list of the local emergency responders is provided in Appendix D of this permit application.

3.3.4 Alternative Waste Handling Plan

In the event of a landfill closure due to an emergency or repairs, RNI will make arrangements to have the waste disposed at alternative facilities as necessary. As explained in this permit application the Bluebell landfill will have two separate cells available for landfill waste disposal. When possible, repairs will be scheduled in such a manner that only one cell will be closed to service and allow the other cell to remain open for disposal. In the case that the entire facility must close due to an emergency, waste will be transported to the another permitted landfill.

3.3.5 General Training Plan

As required in R315-302-2(2), each permitted landfill must have a detailed training program. RNI currently has a training program that educates their employees to properly handle E&P waste and to operate existing components of the entire Bluebell facility. RNI will utilize the Personnel Training Program that is in place for its Wonsit Landfill. Site-specific training will be modified for the Bluebell facility. A copy of the existing Personnel Training Program is part of this permit application and is included in appendix D.

All personnel that will be working on the landfill will be required to participate in weekly safety meetings and morning tailgate safety meetings held at the Bluebell site. All employees will be required to read and review this landfill permit on a semiannually basis. Annual refresher training of the above-mentioned training program will be conducted for all employees involved with the permitted landfill. Any new information relevant to the permitted landfill will also be covered in the annual refresher training. New employees that are assigned to work associated with the landfill will receive training during the first month of employment and will be trained by a supervisor that has completed the required training. Records of this training will be kept in an RNI database and made available to regulators upon request.

3.4 RECORD KEEPING

During the operation of the landfill, RNI will maintain records of landfill activities as required by the division (315-302-2-(3)). These records will be stored electronically in the RNI database.

3.4.1 Daily Permanent Record

The landfill manager will record the following data daily and maintain this data in a permanent file:

- Waste shipment records as described in section 3.2.2
- The estimated weight in tons and volume in cubic yards of E&P landfill waste received each day
- The estimated weight in tons and volume in cubic yards of E&P waste that required pre-processing prior to disposal in the landfill cell each day.
- The estimated weight in tons and volume in cubic yards of material added to treat the waste and the total weight and volume of treated waste each day
- Number of trucks carrying waste to the Landfill each day
- Type of E&P waste received each day
- Daily Paint filter test results
- Annual Deviations from the UDWMRC approved Operations Plan
- Staff training records
- Status of groundwater, leachate and landfill off-gas monitoring
- A written report of notable daily activities at the landfill site

3.4.2 Other Records

The landfill manager will also include the following data in the permanent records on the RNI data base or stored on site:

- Design documentation of the placement or recirculation of leachate or gas condensate into the landfill
- Closure and post closure care plans and activities
- Cost estimates and financial assurance documentation
- Safety training and landfill specific training for all employees employed at the landfill

Attachment 3

Inspection Checklist

WASTE SHIPMENT RECORD

Date: _____

Departure Time from Origin: _____

Load ID No.: _____

Arrival Time at Landfill: _____

Generator of Waste: _____

Origin: _____

Quantity (cubic yards):
Estimated Tons (based on unit weight):
Type of Waste:
Description of Waste:

Name of Trucking Company:
Truck Number:
Truck Driver's Name:
Truck Driver's Signature:

COMMENTS:

DATE: _____

TIME: _____

DAILY PERMANENT RECORD

ITEM	YES	NO	COMMENTS
SITE SECURITY			
Perimeter fence and security gate are in good condition?			
Lock functioning and in place?			
ROADS			
Do roads require watering? If so, record in the operator's log the volume of water used and the section of road watered.			
OPERATIONS			
Collect daily landfill gas monitoring levels and compare to Integrated Water Management Health and Safety Plan Action levels. Upgrade PPE if necessary.			
Estimated Weight in Tons of E&P waste received today			
Estimated Volume in Cubic Yards of E&P waste received today			
Estimated Weight in Tons of E&P waste that required treatment prior to disposal in the landfill cell			
Estimated Volume in Cubic Yards of E&P waste that required treatment prior to disposal in the landfill cell			
Estimated Weight in Tons of material added to treat the waste			
Estimated Volume of material added to treat the waste			
Estimated Total Weight in Tons of treated waste			
Estimated Volume in Cubic Yards of treated waste			
Record daily volumes and weights of wastes received, solidified, and placed in the landfill cell			
Record volume and weight of solidification material used each day.			
Are slopes at which the waste is placed in accordance with the guidance provided by the Project Geotechnical Engineer? If not, contact the Waste Disposal Facility Manager.			
INSPECTION OF GEOCOMPOSITE AND HDPE LINER UNTIL FULLY COVERED			
Are geocomposite and HDPE anchors in place and in good condition?			
Is the geocomposite and/or HDPE systems free of rips, excessive weathering, or excessive tension?			
Monitor daily until the geocomposite layer is completely covered with waste or a protective layer of soil.			
SURFACE WATER MONITORING			
Check daily during March, April and May of each year.			
Is there water flowing in the ephemeral stream near monitoring wells XXXX and YYYYY?			
If so, call the Waste Disposal Facility Manager by the end of the day to make arrangements for annual surface water sampling.			
EMBANKMENT			
Inboard Slope			
Has the geofabric material been covered by soil or water within two weeks of placement?			
If not, cover with at least 4 inches of soil by the end of the day			
NOTES:			
(Record any other significant issues below. Fill out additional pages and attach if necessary.)			
<p>If any checks appear in the "No" column, provide a detailed description of what you observed, including: accurate location, extent of affected area, and a description of the condition.</p> <p>Refer to the Operations Manual, initiate the prescribed corrective action and estimate time of completion.</p> <p>Inform the appropriate Integrated Water Management personnel (Supervisor, and/or Environmental Manager) per the Operations Manual and document the corrective action taken (notes, photos, etc.)</p> <p>Completed By: _____</p>			
Name		Signature	

DATE: _____

TIME: _____

WEEKLY PERMANENT RECORD

ITEM	YES	NO	COMMENTS
SITE SECURITY			
Fire extinguisher is charged, not exceeding inspection deadline?			
Spill kits are stocked on site?			
Emergency eyewash stations are functioning properly and well stocked?			
Signage visible and in good condition?			
Warning signage every 250 feet of exterior fencing and at closest approach of gravel road?			
OPERATIONS			
If there is water in the leachate collection system? If so, remove and record volume transferred to Evaporation Pond 1.			
If there is water in the leak detection sump? If so, remove and record volume transferred to Evaporation Pond 1. Call the landfill Supervisor to inform him.			
Estimated Weight in Tons of E&P waste received this week			
Estimated Volume in Cubic Yards of E&P waste received this week			
Estimated Weight in Tons of E&P waste that required treatment prior to disposal in the landfill cell this week			
Estimated Volume in Cubic Yards of E&P waste that required treatment prior to disposal in the landfill cell this week			
Estimated Weight in Tons of material added to treat the waste this week			
Estimated Volume of material added to treat the waste this week			
Estimated Total Weight in Tons of treated waste this week			
Estimated Volume in Cubic Yards of treated waste this week			
Record weekly volumes and weights of wastes received, solidified, and placed in the landfill cell.			
Record volume and weight of solidification material used each week.			
GROUNDWATER MONITORING			
Check depth to groundwater from top of well casing weekly during March, April and May.			
Is there groundwater present in wells XXXX, YYYYY and ZZZZ?. If so, call the Waste Disposal Facility Manager by the end of the day to arrange for annual groundwater sampling (Once sampling is completed, monitoring of groundwater levels can be discontinued for the year. Measure water levels from the top of well casing to the nearest 1/100 th of a foot)			
EMBANKMENT			
Crest			
Are there any signs of erosion gullies greater than 6 inches deep?			
Are there any signs of settlement, cracks slides, slumps, boils, sinkholes or other?			
Outboard Slope to 10 feet past the Toe			
Are there any signs of erosion gullies greater than 6 inches deep?			
Are there any signs of settlement, cracks slides, slumps, boils, sinkholes or other?			
Are there any debris or weeds that prevent the inspection?			
Are there new signs of seepage (ie: flows of water, wet spots, or ponding)?			
Is there evidence of burrowing animals?			
Are the diversion channels serviceable and unobstructed?			
NOTES:			
(Record any other significant issues below. Fill out additional pages and attach if necessary.)			
If any checks appear in the "No" column, provide a detailed description of what you observed, including: accurate location, extent of affected area, and a description of the condition.			
Refer to the Operations Manual, initiate the prescribed corrective action and estimate time of completion.			
Inform the appropriate Integrated Water Management personnel (Supervisor, and/or Environmental Manager) per the Operations Manual and document the corrective action taken (notes, photos, etc.)			
Completed By:			
Name _____		Signature _____	

Attachment 4

Closure

3.0 CLOSURE PLAN

3.1 CLOSURE SCHEDULE

Each RNI landfill cell will be closed in a single operation that includes the final grading of the waste material and the placement of the final cover. The expected duration of the land fill operation is approximately 9 years at a 10% growth rate. Sixty days prior to the expected final receipt of waste, RNI will notify the division of their intent to begin closure operations. RNI will begin its closure operations after the final receipt of waste is obtained. It is anticipated that the closure operation will take place over an anticipated duration of 90 to 120 days. During this period the landfill cell will be graded, covered and surveyed. As-built plans will be generated for reference for the final inspection by the division.

3.2 DESIGN OF FINAL COVER

The final cover will consist of two soil layers. The lower layer will consist of a compacted clay soil liner which will be overlain by an upper layer of soil that will be seeded with native grasses. The construction of the lower layer portion of the final cover will be an Alternative Design that will achieve equivalent requirements as the Standard Design as prescribed in R315-303-3(4)(c)(i). The upper layer will follow the Standard Design requirements as explained in R315-303-3(4)(a)(ii). Cover soils will be constructed from soils that are available at the Bluebell Disposal site. All testing and calculations are based on samples of the native soils at the site.

The Alternative Final Cover Design The waste will be covered with a minimum of 6 inches of clay that will have a permeability of at most 1×10^{-6} cm/second. The Utah regulation R315-303-3(4)(c)(i) requires that the alternative final cover of a soil liner must achieve and equivalent reduction in infiltration as achieved by the standard design. Standard design calls for at least 18 inches of compacted soil, or equivalent, with a permeability of 1×10^{-5} cm/sec or less, or equivalent. On site Soils used for the final cover are far less permeable than this requirement. The proposed lower layer will use 6 inches of clayey soils that have a permeability of no greater than 1×10^{-6} cm/s. Based on engineering calculations 6 inches of soils with a permeability no more than 1×10^{-6} cm/sec is equivalent to 18 inches of soils that are permeable up to 1×10^{-5} cm/second. The equivalency is based on calculated infiltration rates. These calculations are included as part of our mathematical model included in Appendix B of this permit application and explained in the following paragraph.

As part of the requirements of an alternative final cover design, expected performance of the alternative cover has been documented by use of a mathematical model as required in

R315-303-3(4)(d). Line item 3 of the model includes a hydraulic conductivity test that was performed on a sample of cover soils obtained from the Bluebell facility. The lab test was performed in accordance with ASTM D5084 method C that resulted in a lab measurement of 7.74×10^{-7} cm/second. This result exceeds minimum requirement of 1×10^{-5} cm/second of the standard design, i.e. the soil is less permeable. The mathematic model also includes other lab tests on the soil that demonstrate that the soil is non-dispersive (see line 1 of calculations). Lines 5 through 15 include the model that demonstrates the performance of the soils used for the alternative cover. Climatic conditions are referenced in line Item 5 and includes the normal precipitation and wettest 5 years on record as required in R315-303-3(4)(d)(i) and (ii). Using this data, we then calculated the annual soil erosion rate using the Revised Universal Soil Loss Equation that is commonly used by the EPA and NRCS. Using this equation, we are able to show that the proposed cover design would lose annually 0.02 inches of soil over the entire cap (line 14). Applying a factor of safety of 10, the unattended and unrepaired cover would lose 6 inches of soil after 20 years. It is our engineering opinion that this alternative design is equivalent to the Standard Design.

In addition, R315-303-3(4)(a)(ii) also requires that a second layer of soil is to be use for reducing erosion consisting of at least 6 inches of soil capable of sustaining vegetative growth placed over the compacted soil cover and seeded with grass, other shallow rooted vegetation, or other native vegetation. Our proposed design follows the standard design requirements in that the compacted clay liner soils will be covered with a second soil layer that will be a minimum of 6 inches of soil as prescribed in R315-303-3(4)(a)(ii). This soil layer will be capable of sustaining vegetative growth and will be seeded with native shallow root vegetation or native vegetation to minimize erosion of the final cover. It is our understanding that locally available topsoil suitable for vegetative growth may be readily available to be utilized at the time of closure. These soils may be tested for organic content, permeability and cohesion prior to use as final cover soil.

The final cover for each cell will be graded to a slope no steeper than 3:1 around the outer perimeter of the landfill cell. The top elevation of the landfill cap will be rectangular and will have a slope of no less than 2%. To control the run-off of storm water and minimize erosion of the final cover material, it is intended that the final cover soils be seeded with native grasses and use other erosion controls as may be needed. The final cover may be reseeded as needed during the post closure phase of the landfill. The final cover plans of each landfill cell are included in Appendix B of this permit application.

3.3 CAPACITY OF LANDFILL

The estimated capacity of the pond 6 landfill cell up to the final cover is 245,000 cubic yards. The pond 7 landfill cell has an estimated capacity of 335,000 cubic yards. With the assumptions of a daily rate of 60 cubic yards of waste delivered at the site and half the

waste being mixed with additional material and 10% growth every year, the combined life of the two landfills is estimated to be at least 9 years. A table with the projected duration for each landfill is provided in appendix E as Plate E-1. When the landfill cell recaches capacity limits RNI will initiate the closure process and notify the Division in advance as required.

3.4 FINAL INSPECTION

After the completion of the final cover, the final inspection of the landfill cell will be conducted by officials from UDSHW. RNI will notify the division of the anticipated date of completion and make arrangements for scheduling the inspection.